

FUTURE FLOATING BASE?

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The capability to project combat power practically anywhere in the world is a cornerstone of current U.S. military doctrine. The capability depends, in some measure, on having virtually unimpeded and sustained access to areas of potential or actual concern.

Although such access cannot be guaranteed, the capability of U.S. forces to deploy to forward bases—air bases, ports and logistics facilities—irrespective of either the availability or the suitability of host nation support, could be more certain by stationing a floating base in international waters.

The Mobile Offshore Base (MOB) would enhance military capabilities and may also have

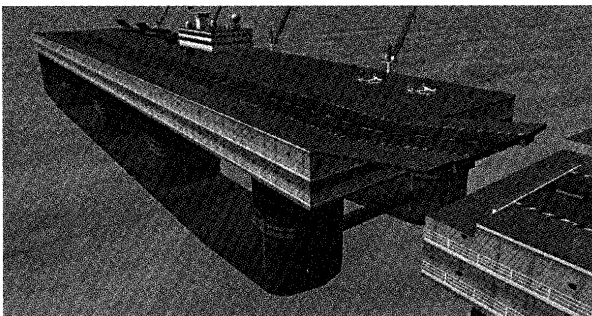
civilian use. The Naval Facilities Engineering Service Center (NFESC) is coordinating a program aimed at resolving fundamental uncertainties about the technical feasibility and the cost of a MOB. Many of the proposed characteristics of a MOB are unprecedented.

Compared to any other offshore platform, the length of a MOB makes it unique; there is no



J. Ray McDermott Engineering proposes that compliant hinges connect five semisubmersible modules (each 300m long) to create a 1,500m runway.

Bechtel National Inc. proposes that thrusters actively position three semisubmersible modules (each 488m long) in a straight line, forming a runway.



precedent, no fabrication experience, and no design standards for such a structure. The flight deck would be up to 2 kilometers long, sufficient to accommodate conventional fixed-wing aircraft.

Over 275,000 square meters of enclosed storage space would provide selective retrieval and refurbishment of cargo for a full Army brigade. The facility would provide high throughput cargo transfer to ships and landing craft in

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open oceans. The floating structure would survive in hurricanes and typhoons. The hull would operate for 40 years between major overhauls.

Can the MOB be Built?

A team of government representatives and some 65 private contractors from 19 states is developing MOB technologies. The American Bureau of Shipping is developing a classification guide that extends existing commercial design standards to a MOB and serves as the basis for certifying structural adequacy and safety. Several alternative MOB concepts are being advanced to identify technology gaps and assess design tools. While further devel-

opment may lead to more effective concepts, studies thus far have lead to a series of semisubmersible modules. The smaller, simpler-to-construct modules could transit at speeds up to 15 knots, and would be connected end-to-end on site, forming a large base suited to air and sea cargo operations.

Each module has cargo decks supported by vertical columns, connected at their bases by longitudinal pontoons. By deballasting up and riding on its pontoons when in transit, form drag is reduced. By ballasting down—putting the pontoons underwater—when on station, the hull develops relatively small wave forces.

MOB Concepts

Each MOB concept deals with the method of connecting the modules into a structure of sufficient length to form a runway. In the hinged concept (see photo), quick-connect pins and large, collapsible rubber cones link the individual semisubmersible modules, creating a long runway. The pins reduce the vertical bending forces found in a full-length monolithic hull by allowing the modules to pitch relative to one another.

In the flexible concept, the long length and inherent flexibility of the bridges allow the semisubmersible modules to move relative to one another without discrete angular changes in the runway. Providing distributed compli-

ance, the flexible bridge helps maintain a runway that is continuous in both translation and rotation.

In the independent module concept (see photo), dynamically controlled thrusters maintain overall orientation and close relative position of the modules. A short drawbridge spans the gap between modules and creates a continuous airplane runway. Although the individual modules are functionally connected with drawbridges, no structural connection exists between modules. One disconnects into separate modules by simply raising the drawbridge and powering the modules apart.

Traditional steel fabrication is the proposed construction material for each of these concepts, although Aker Maritime Contractors has suggested that each module be built with a steel deck and a concrete hull.

The Roots of MOB

Many of the technical ideas for a MOB have their roots in the offshore industry. As such, the technical achievements of a MOB will benefit the military and improve the general design and analysis capabilities of the offshore industry. In 1994, Brown and Root proposed a 915-meter-long MOB that provided an initial assessment of MOB feasibility within the modern capabilities of the offshore industry. This year, the Sea Launch consortium, which includes Kvaerner Maritime, begins launches of space vehicles from a mobile ocean platform.

For more information, visit the Internet site at <http://mob.nfesc.navy.mil>.

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